STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

May 2018

Log No. _____

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # **C406.7 High performance dedicated outdoor air system (DOAS)**

Brief Description:

Add high performance DOAS C406 option with performance requirements less stringent than those of C406.7 but more stringent than C406.6.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

TABLE C406.1
EFFICIENCY PACKAGE CREDITS

Code Section	Commercial Building Occupancy					
	Group R-1	Group R-2	Group B	Group E	Group M	All Other
	Additional Efficiency Credits					
1. More efficient HVAC performance in accordance with Section C406.2	2.0	3.0	3.0	2.0	1.0	2.0
2. Reduced lighting power: Option 1 in accordance with Section C406.3.1	1.0	1.0	2.0	2.0	3.0	2.0
3. Reduced lighting power: Option 2 in accordance with Section C406.3.2[a]	2.0	3.0	4.0	4.0	6.0	4.0
4. Enhanced lighting controls in accordance with Section C406.4	NA	NA	1.0	1.0	1.0	1.0
5. On-site supply of renewable energy in accordance with C406.5	3.0	3.0	3.0	3.0	3.0	3.0
6. Dedicated outdoor air system in accordance with Section C406.6[b]	4.0	4.0	4.0	NA	NA	4.0
7. High performance dedicated outdoor air system: Option 1 in accordance with Section C406.7.1	2.0	2.0	2.0	2.0	2.0	2.0

~~7.~~8. High performance dedicated outdoor air system Option 2 in accordance with Section C406.7.2[c]	4.0	4.0	4.0	4.0	4.0	4.0
~~8.~~9. High-efficiency service water heating in accordance with Sections C406.8.1 and C406.8.2	4.0	5.0	NA	NA	NA	8.0
~~9.~~10. High performance service water heating in multi-family buildings in accordance with Section C406.9	7.0	8.0	NA	NA	NA	NA
~~10.~~11. Enhanced envelope performance in accordance with Section C406.10[cd]	3.0	6.0	3.0	3.0	3.0	4.0
~~11.~~12. Reduced air infiltration in accordance with Section C406.11[cd]	1.0	2.0	1.0	1.0	1.0	1.0
~~12.~~ 13. Enhanced commercial kitchen equipment in accordance with Section C406.12	5.0	NA	NA	NA	5.0	5.0 (Group A-2 only)

a. Projects using this option may not use Item 2.
b. This option is not available to buildings subject to the prescriptive requirements of Section C403.3.5.
c. Projects using this option may not use Item 7.
d. Buildings or building areas that are exempt from thermal envelope requirements in accordance with Sections C402.1.1 and C402.1.2 do not qualify for this package.

C406.7 High performance dedicated outdoor air system (DOAS). A whole building, building addition or tenant space which includes a DOAS complying with Section C406.6 shall also comply with Section C406.7.1 or C406.7.2. ~~provide minimum sensible effectiveness of heat recovery of 80 percent and DOAS total combined fan power less than 0.5 W/cfm of outdoor air. For the purposes of this section, total combined fan power includes all supply, exhaust, recirculation and other fans utilized for the purpose of ventilation.~~

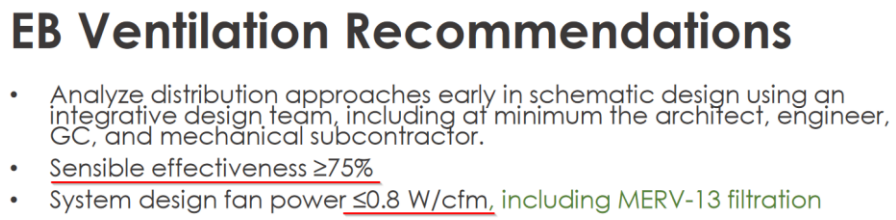
C406.7.1 High performance dedicated outdoor air system (DOAS) option 1. A whole building, building addition or tenant space which includes a DOAS complying with Section C406.6 shall also provide minimum sensible effectiveness of heat recovery of 75 percent and DOAS total combined fan power less than 0.8 W/cfm of outdoor air. For the purposes of this section, total combined fan power includes all supply, exhaust, recirculation and other fans utilized for the purpose of ventilation.

C406.7.1 High performance dedicated outdoor air system (DOAS) option 2. A whole building, building addition or tenant space which includes a DOAS complying with Section C406.6 shall also provide minimum sensible effectiveness of heat recovery of 80 percent and DOAS total combined fan power less than 0.5 W/cfm of outdoor air. For the purposes of this section, total combined fan power includes all supply, exhaust, recirculation and other fans utilized for the purpose of ventilation.

Purpose of code change:

While large reductions in energy consumption are realized with a high-performance DOAS, the fan power target of 0.5 W/cfm may be prohibitively difficult to achieve, particularly for larger DOAS units. Introducing an "in-between" high performance DOAS C406 option allows for projects to realistically pursue a higher-performing alternate while still measurably reducing the building's energy and carbon footprint.

The target sensible effectiveness of 75% and fan power of 0.8 W/cfm were selected following the recommendations of the Exemplary Buildings Program for balanced heat recovery systems (note that the set of recommendations are still in progress):



https://exemplarybuilding.housingconsortium.org/our-results-practical-tools/

https://exemplarybuilding.housingconsortium.org/wp-content/uploads/sites/2/2020/12/HDC-Exemplary-Bldgs_-BVHR-Workshop-Slides_-12.03.2020_-not-final-guidelines.pdf

Your amendment must meet one of the following criteria. Select at least one:

- ☐ Addresses a critical life/safety need.
- ☐ The amendment clarifies the intent or application of the code.
- ☒ Addresses a specific state policy or statute. (Note that energy conservation is a state policy)
- ☐ Consistency with state or federal regulations.
- ☐ Addresses a unique character of the state.
- ☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

- ☐ Single family/duplex/townhome
- ☐ Multi-family 1 – 3 stories
- ☒ Multi-family 4 + stories
- ☐ Commercial / Retail
- ☐ Institutional
- ☐ Industrial

Your name	Aaron Whitlatch	Email address	aaronw@rushingco.com
Your organization	Rushing	Phone number	206-788-4573
Other contact name	Eric Vander Mey		

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9278.

Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

$Click here to enter text./square foot (For residential projects, also provide $Click here to enter text./ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

As this is a proposed change to the C406 section this is an option that an owner can pursue if they choose this option and determine that it is cost effective. Therefore, cost analysis information has not been provided as it is not a mandatory requirement of the code.

Therefore, only information is provided as to the energy and/or carbon emissions savings. The Energy Code TAG may need to adjust the number of credits for based on final code language for this credit or other credits.

Less costly than high efficient DOAS.

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

Click here to enter text.KWH/ square foot (or) Click here to enter text.KBTU/ square foot

(For residential projects, also provide Click here to enter text.KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Energy savings between the standard DOAS and high-efficiency DOAS from 2015 Code.

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

None anticipated.

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.